the tumor. The third case was of the flat infiltrating and ulcerated type least easy to recognize early and hardest of all to treat. Total excision of the bladder was the only alternative to refusing operation.

When the profession and the public wake up to the fact that blood in the bladder urine, either with or without pus, points straight to some probably serious lesion in the urinary tract, and that constant or recurring hematuria is the first and often the only early symptom in most cases of bladder tumor, then surgeons will have an opportunity to cure.

So long as the profession and the public ignore nature's plain warning and make surgery the court of last resort, just so long will sentence of death be passed on most individuals with bleeding bladder tumors.

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INTRACRANIAL HEMORRHAGE IN THE NEWBORN.*

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By intracranial hemorrhage in the newborn is meant the occurrence of hemorrhage from the cerebral veins which lie beneath the dura mater. The extravasated blood is spread over the cerebral hemispheres, or it may extend beneath the tentorium, involving the cerebellum. This hemorrhage gives rise to symptoms of cerebral compression, the early recognition of which may mean the difference between the life and death of the infant and also prevent the complications which may ensue in later life, namely, spastic paraplegia, diplegia, epilepsy, amentia, etc.

Only in the past three or four years has this subject been put on a comprehensible basis and its importance emphasized. To Cushing belongs the credit of working out this problem. His article, which came out in 1905, is a classic and should be read by all medical men. The results obtained by him in surgical intervention and in pathological findings have cleared up another blank page in the treatment and diagnosis of infantile diseases.

One of the chief objects in the presentation of these two cases and a short review of the literature of the subject is to impress upon obstetrical attendants the importance of careful observation of the infant during the first few days of its existence and also the need of post-mortem examination in those cases of early death where the cause is at all questionable. In this class of cases permission to at least open the head is not difficult to obtain if the importance of the diagnosis is explained to the parents, especially with its possible bearing on future pregnancies in the family, and the reader has twice been able in this manner to confirm doubtful diagnoses.

The importance of one phase of this subject may be well estimated by an editorial which recently appeared in the *British Journal of Children's Diseases*. It is as follows: "We propose this month to anticipate a topic which in the future will probably bulk largely in relation to the prevention of a condition that hitherto has been in no way amenable to treatment; we refer to certain varieties of Little's disease or spastic diplegia. An important cause of the affection is meningeal hemorrhage occurring at or soon after birth."

To-night we are more interested in the early recognition and treatment of the hemorrhage, and it is along this line that the subject will be presented.

The symptoms of this condition are entirely those of cerebral compression resulting from the intracranial hemorrhage, and I think it worth while to mention briefly the cerebral blood supply and the vessels affected.

The superior longitudinal sinus from its origin at the ethmoid bone to the torcular herophyli receives from ten to twelve veins from the superior cerebral surface on each side. A number varying from four to six of these are large in size. With one or two exceptions these larger vessels enter the sinus under cover of the parietal bone, but more especially at its anterior and posterior border close to the coronal and lambdoidal sutures. They are usually larger in the region of the coronal suture. The presence of these large vessels close to these cranial sutures suggests the possibility of their injury in the displacement and overlapping of the cranial bones during parturition.

The anatomical arrangement of the superior cerebral veins and their relationship to the superior longitudinal sinus and the coronal and sagittal sutures seems to favor their injury, not only from cranial compression, but also from increased intracranial venous pressure in asphyxia, just as in later months they may rupture under the passive congestion brought about by a paroxysm of whooping cough or a severe convulsion. When one considers the immense amount of traumatism the infant's head must be subjected to, particularly if the child is large and the first-born of an elderly primipera, it is little wonder that lesions of this kind occur, and this even without the additional strain that may be occasioned by the instrumental delivery which a narrow pelvis or inelastic soft tissues may ultimately necessitate.

The infant's brain is doubtless fitted by nature to withstand, without injury or shock, a degree of molding and manipulation which could not be borne by an adult fully developed and medullated brain. And furthermore, in cases of traumatic edema or of actual hemorrhage the distensibility of the partially membranous skull will accommodate effusions of such extent that, were they to take place in an adult skull in proportionate

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extent, they would prove rapidly fatal. It is probably distensibility of fontanelle and skull which let many of these infants escape death, and it is natural to suppose that the pressure of a clot which may be long in absorbing or which organizes slowly will, through a local compression anemia, prevent the normal development and lead to cerebral abnormalities that we recognize as the late evidence of the lesion.

I wish to report to the society to-night two cases of intracranial hemorrhage in the newborn, in both of which the diagnosis was subsequently confirmed by post-mortem examination.

The first case was the infant of a primipera, delivered by low forceps after an eighteen-hour labor, the last three hours of which was severe, the uterine contractions being practically continuous without progress. The extraction was not difficult, the infant was not marked by the blades, and he cried lustily at once. The mother's milk came in on the second day and the infant took hold well up to the 4 P.M. feeding on the fourth day. He refused to nurse at this time and appeared stupid. He took the 6 P.M. and the 10 P.M. feedings all right, so nothing was thought of it at the time. On the fifth day he again refused his early feeding and was again stupid. I saw him at 8 A.M. He lay on his back in a profound stupor, the legs and arms were held flexed, but he moved them alike when disturbed. The limbs were held in an abnormal condition of tension, which let up from time to time, and in one of these periods of relaxation the knee jerks were tested and not thought exaggerated. There was no Babinski reaction or ankle clonus. No Koenig's sign. The examination of the heart and lungs was negative although the respirations were very rapid. The cord was off and the stump was clean. On the roof of the mouth was a superficial hemorrhagic area the size of a ten-cent piece. The pupils were equal and reacted to light. There was no twitching of the face or extremities. The anterior fontanelle was tense but not pulsating. The pulse was 96 and a half hour later had dropped to 88. Temperature was 99 by rectum. The possibility of an intracranial lesion was considered and a consultation was held an hour later. This second examination seemed to stir the infant up considerably, and his pulse went up to 120. He came out of his stupor and again cried lustily. Close observation was determined upon for the time and he was again put to the breast. He refused to take the left nipple, but took hold of the right for about five minutes, then stopped and continued crying. Later he was given 1½ oz. of breast milk from a Breck feeder, all of which he took and was quiet for a time, but in two hours was again very restless. Another consultation was held a few hours later and the clinical picture was about the same or a little more exaggerated. A lumbar puncture was done and a teasponful of a bloody fluid obtained, but as the puncture wound continued to bleed, the possibility of pricking a vessel was considered and not as much import given this symptom as should have been, as was subsequently shown. The possibility of a severe toxemia or a general infection could not be absolutely ruled out, as all of the infant's symptoms with the exception of the bulging fontanelle and the presence of blood in the spinal fluid were compatible with either. It was decided safe to delay until the result of catharsis could be seen, so the infant was given 2 drams of castor oil and enough bromide to quiet him. In an hour he had quieted down and the pulse seemed better and he continued to improve up to 10 P.M. when he had a sinking spell from which he rallied with the administration of brandy and salt solution. At 3 A.M. he had another sinking spell from which he did not rally and died at this time. There had been no cyanosis at any time save at the end. Five hours later permission was readily given to examine the skull, and the skull cap was removed, the parietal bones were reflected back and the dura exposed. The left side of the brain looked normal; on the right the dura was blue and on opening it the whole cerebral hemisphere on the right was found covered with a fresh hemorrhage; the amount seemed to increase as you approached the base of the brain. The cortical substance appeared normal. Had we operated the day before, when we were reasonably sure of our diagnosis, the infant's life might have been saved, although from the excessive amount of blood at the base of the brain the hemorrhage undoubtedly extended below the tentorium, and this type are generally fatal.

The second case was in a multipara, the fifth pregnancy. She had no living children, all having died at or before birth. This one was expected in February but she ruptured her membranes a month before and labor started within two hours. Five hours later she delivered herself of a 7½-lb. infant. He cried at once, but on account of the time reckoning was treated as a premature, put in a premature jacket, surrounded with heaters and given two drops of brandy every four hours. He slept for twelve hours, then was put to the breast and seemed satisfied with what he obtained. At midnight of the second day he cried a good deal, but quieted down with a little sterile water and seemed all right up to 6 A.M., when the nurse noticed his color was not good and that he was twitching the right eye and the right side of his mouth. I saw him an hour later, and he was having a convulsion, the anterior fontanelle was bulging, and he was extremely cyanotic. He died in about five minutes. On my night visit the previous day, or about ten hours before this all occurred, the infant was asleep in his crib. As in the previous case the head was opened and the left hemisphere was found covered with a fresh hemorrhage; the cerebral substance beneath looked almost macerated, as if the process had been of a rather long duration. There was no evidence of any hemorrhage elsewhere.

From a diagnostic standpoint the most interesting features of these cases were the absence of localizing symptoms, and apparently this is characteristic of these cases. Unquestionably to my mind many cases of early death in infants which have been put down as inanition and other causes have been due to this condition of intracranial hemorrhage, and this second case was one which might easily have been put in that category had it not been for the post-mortem finding. The diagnosis in these cases is made entirely on symptoms of cerebral compression, and these vary considerably, depending upon whether the hemorrhage lies above or below the tentorium.

In infratentorial or cerebellar hemorrhage the infants are at first generally quiet and take their nourishment, but the respiration becomes affected; accordingly we see cyanosis, irregular and convulsive breathing, and finally, owing to the formation of collateral edema of the cerebral hemispheres, general convulsions supervene and death usually occurs on the second or third day. In supratentorial or cerebral hemorrhage, which is generally unilateral, in addition to the symptoms of compression, restlessness, crying, refusal of

food from the first, coma, irregular respirations and action of the heart, frequent bradycardia, and, during the stage of excitement, vasomotor disturbances, there are definite signs of a unilateral focus, as facial paresis, spasm of the extremities, with increase of the reflexes on the opposite side, from which the seat of the lesion may be determined.

When the hemorrhage is both above and below the tentorium there are symptoms of both categories.

Confirmatory evidence can be obtained by lumbar puncture from the presence of blood cells in the meningeal fluid. This symptom accompanied by a bulging anterior fontanelle is practically pathognomonic of the condition.

Great stress is laid on the asphyxia as being the immediate cause of the hemorrhage. The hemorrhage does not result from the application of the forceps, but from the difficulty in the labor that necessitated their use.

As regards treatment, the only hope for beneficial results lies in immediate operation. In 1905 Cushing had done 4 cases with 2 recoveries and in 1908 he reports 9 cases, in 4 of which the infant recovered. He is of the opinion that at the time of onset the indications for immediate surgical intervention are as definite in many of these cases as they are when corresponding symptoms are unmistakably the result of a traumatic hemorrhage occurring in adult life. A more careful study of the symptomology of these cases is necessary, so that the condition may be recognized earlier and immediate operation may be taken for their relief and possibly to ward off the consequences of the hemorrhages as mentioned.

The operation consists in raising a large osteoplastic flap, opening the dura and clearing away the extravasated blood with salt solution irrigation. The dura is then closed, the bone flap replaced and the wound closed without drainage. With proper regard for hemostasis and careful avoidance of exposure, a newborn child will stand a cranial operation well.

Cushing concludes his article with this statement: "If it can be demonstrated that a craniotomy on the newborn child, when conducted with due precaution and delicacy of manipulation, is comparatively free from danger, I believe the immediate risk of death and the sorry late consequences of meningeal birth hemorrhages may be avoided in many cases by surgical interference. Also that these explorations will lead to a better understanding of the pathology of this group of diseases in their early stages."

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THE LUYS URINE SEPARATOR. SECOND REPORT OF FORTY-ONE CASES.

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SINCE the publication of my first paper on the Luys separator,[1] I have used this instrument to obtain the urine from either kidney in 27 cases, making in all 41 cases to date. Further experience with this instrument, extending over a period of three and one-half years, confirms the conclusions of my first paper and leads me to consider the Luys separator only second in point of value to the catheterizing cystoscope.

Notwithstanding the value of this instrument, and of favorable reports of the comparatively few who have used it, there seems to be a decided prejudice in the profession at large against the separator. This is mainly due, I believe, to the failure of one of the first of the urine segregators, the Harris, the stigma of that instrument attaching itself to all of the later separators.

SUMMARY OF CASES.

There are 41 cases, 14 male and 27 female. In two of these cases, cited below, the separator did not work. The remaining 39 cases were: 3, absence of the kidney on one side; 1, partial nephrectomy for trauma of the kidney; 1, congenital defect of kidney; 5, pyonephrosis stone; 1, pyelitis unilateral and 3, bilateral; 2, pyelonephritis unilateral and 1, bilateral; 2 cases of unilateral nephritis; 6, tuberculous kidney, unilateral; 3 cases of unilateral hematuria and 1 bilateral; 1 case of hemorrhagic parenchymatous nephritis, unilateral; 3, floating kidney; 8 normal kidneys.

In 9 of the 39 cases ureteral catheterism was performed in addition to the urinary separation. Twenty-one of the 39 cases were operated upon, the operation confirming the results of the separation. In 21 cases there were pathological conditions of the bladder, from severe tuberculous cystitis to trabeculated bladder. The separator gave accurate results in all of these cases and in at least a few an accurate diagnosis would have been impossible without the aid of this instrument.

URINARY SEPARATION IN CASES IN WHICH CYSTITIS IS PRESENT.

Many believe that a separator cannot be used in cases in which cystitis is present. The reason for this has apparently the theoretical basis that the kidney urine flowing over an inflamed bladder will gather pus and become so contaminated as to make all results unreliable. Of the cases I have examined, 21 had pathological conditions of the bladder. I have never found that the cystitis has interfered with making an accurate estimate of the kidney condition.

There are two reasons for this: first, an inflamed bladder when once washed clear of pus very slowly reclouds. A cystoscopic examination may be prolonged for some time without a cloudy

[1] "The Luys Urine Separator," Am. Jour. Med. Sc., March, 1907.